

Name: _____

Worksheet – Simplifying Non-Variable Roots of Higher Degree

Directions: Please simplify the following with an exact answer.

1. $\sqrt[4]{625}$

Handwritten solution for 1: Prime factorization of 625 is $5 \cdot 5 \cdot 5 \cdot 5$. The result is 5 .

2. $\sqrt[3]{-8}$

Handwritten solution for 2: Prime factorization of -8 is $-1 \cdot 2 \cdot 2 \cdot 2$. The result is -2 .

3. $6 \cdot \sqrt[5]{243}$

Handwritten solution for 3: Prime factorization of 243 is $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$. The result is $6 \cdot 3 = 18$.

4. $-7 \cdot \sqrt[3]{64}$

Handwritten solution for 4: Prime factorization of 64 is $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$. The result is $-7 \cdot 2 \cdot 2 = -28$.

5. $\sqrt[4]{1536}$

Handwritten solution for 5: Prime factorization of 1536 is $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$. The result is $4 \cdot \sqrt[4]{6}$.

6. $\sqrt[3]{-8640}$

Handwritten solution for 6: Prime factorization of -8640 is $-1 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 5$. The result is $-12 \cdot \sqrt[3]{5}$.

7. $\sqrt[4]{810}$

Handwritten solution for 7: Prime factorization of 810 is $2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 5$. The result is $3 \cdot \sqrt[4]{2 \cdot 5}$.

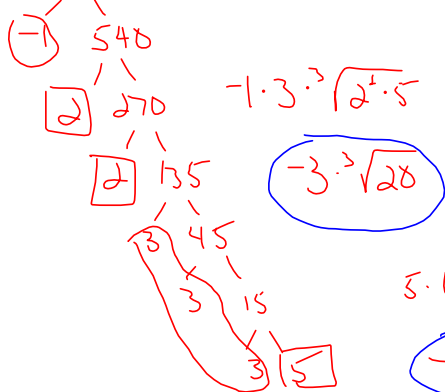
8. $11 \sqrt[4]{96}$

Handwritten solution for 8: Prime factorization of 96 is $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$. The result is $11 \cdot 2 \cdot \sqrt[4]{2 \cdot 3}$.

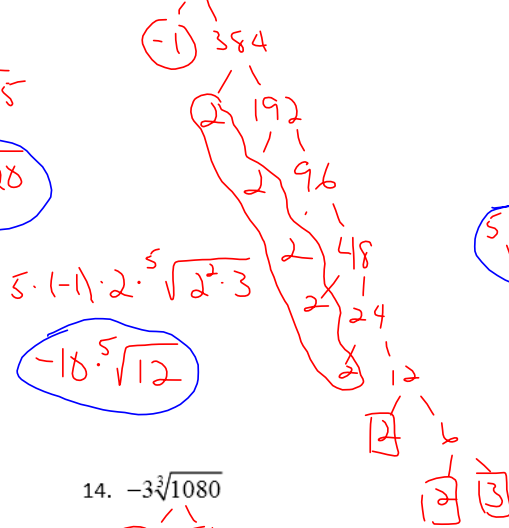
9. $\sqrt[5]{3888}$

Handwritten solution for 9: Prime factorization of 3888 is $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$. The result is $3 \cdot \sqrt[5]{2^4}$.

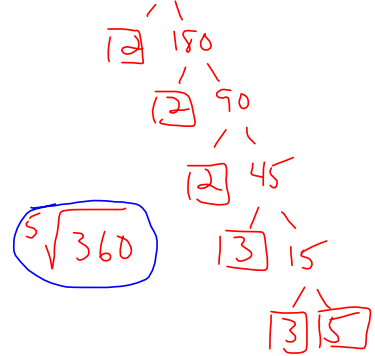
10. $\sqrt[3]{-540}$



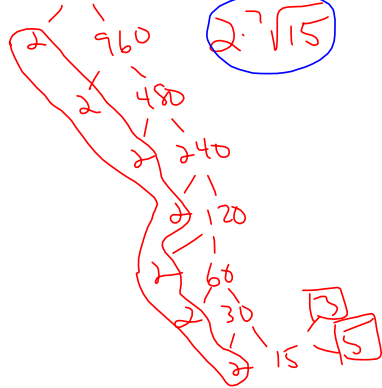
11. $5 \cdot \sqrt[5]{-384}$



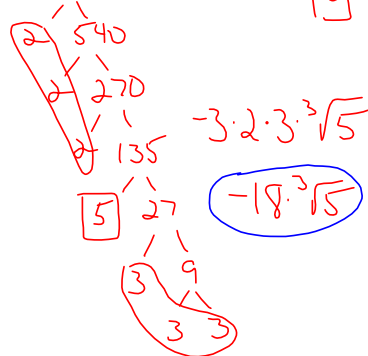
12. $\sqrt[5]{360}$



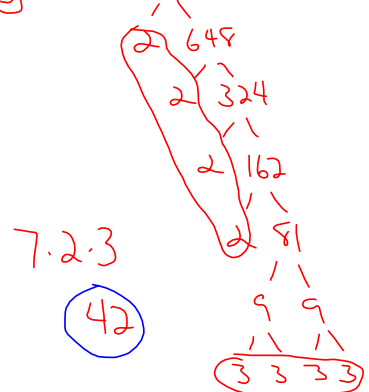
13. $\sqrt[7]{1920}$



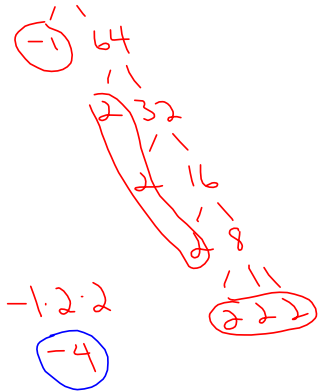
14. $-3 \sqrt[3]{1080}$



15. $7 \cdot \sqrt[4]{1296}$



16. $\sqrt[3]{-64}$



17. $\sqrt[4]{-625}$

eventh root
of a
neg
undefined

18. $\sqrt{-20}$

eventh root
of a
neg
undefined